GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

CITY OF LANSING POLICE AND FIRE RETIREMENT SYSTEM

ACTUARIAL VALUATION REPORT

DECEMBER 31, 2008

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January 7, 2010

The Board of Trustees
City of Lansing
Police and Fire Retirement System
Lansing, Michigan

Dear Board Members:

Submitted in this report are the results of the Sixty-Fifth Annual Actuarial Valuation of the assets, actuarial values, and contribution requirements associated with benefits provided by the City of Lansing Police and Fire Retirement System.

The date of the valuation was December 31, 2008.

Valuation results, comments and conclusions are contained in Section A.

The valuation was based upon information, furnished by your Secretary, concerning Retirement System benefits, financial transactions, and individual members, terminated members, retirants and beneficiaries. Data was checked for year to year consistency, but was not otherwise audited by us. This information is summarized in Section B.

Descriptions of the actuarial cost methods and actuarial assumptions are contained in Section C, along with a glossary of technical terms.

One or more of the undersigned actuaries submitting this report are Members of the American Academy of Actuaries (MAAA) as indicated, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

To the best of our knowledge, this report is complete and accurate and was made in accordance with generally recognized actuarial methods of the American Academy of Actuaries in compliance with the laws governing the operation of the Retirement System. The actuarial assumptions used for the valuation produce results which we believe individually and in the aggregate are reasonable.

Respectfully submitted,

David L. Hoffman

Brad Lee Armstrong, FCA, MAAA, ASA, EA

DLH:BLA:lr

SECTION A

VALUATION RESULTS, COMMENTS AND CONCLUSIONS

FINANCIAL OBJECTIVE

The financial objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year to year and will not have to be increased for future generations of citizens. This objective meets the requirements of the laws governing the operation of the Retirement System and Article IX, Section 24 of the Constitution of the State of Michigan.

CONTRIBUTION RATES

The Retirement System is supported by member contributions, City contributions and investment income from Retirement System assets.

Contributions which satisfy the financial objective are determined by an annual actuarial valuation and are sufficient to:

(1) Cover the actuarial present value of benefits assigned to the current year by the actuarial cost methods described in Section C (the normal cost); and

(2) amortize over a period of future years the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs (unfunded actuarial accrued liability).

Contribution requirements for the fiscal year beginning July 1, 2009 are shown on page A-2.

CONTRIBUTIONS COMPUTED TO MEET THE FINANCIAL OBJECTIVE OF THE RETIREMENT SYSTEM FOR THE FISCAL YEAR BEGINNING JULY 1, 2009

Contributions for	Contributions Expressed as Percents of Active Member Payroll
Normal Cost	
Age & service benefits	20.83 %
Disability benefits	1.91
Pre-retirement survivor benefits	0.35
Termination benefits:	
Deferred age & service benefits	0.42
Refunds of member contributions	0.16
Total Normal Cost	23.67
Amortization Payment	
Retired members and beneficiaries	0.00
Active and vested terminated members	7.11
Total Amortization Payment	7.11
Total Contribution Requirement	30.78 %
Member portion (weighted average)	8.19
City portion	22.59 %

Unfunded actuarial accrued liabilities were amortized as a level percent of active member payroll over an open period of 30 years. The characteristics of this method of amortizing unfunded actuarial accrued liabilities are illustrated on page C-6.

A procedure for determining dollar contribution amounts is described on page A-3.

Comparative contribution amounts for prior fiscal years are shown on page A-7.

DETERMINING DOLLAR CONTRIBUTIONS

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollar amounts. We recommend the following procedure:

Contribute the following annual amount on November 1, 2009: $7,179,360.

This dollar amount is derived by multiplying the City's percent-of-payroll contribution requirement (22.59%) by the active member payroll ($30,161,471) projected 16 months at 4% to reflect the assumed November 1 contribution date. This payroll projection factor is equal to 1.0537.

The above amount is assumed to be contributed on November 1, 2009. If contributions are made on a later schedule, interest should be added at the rate of 0.643% (compounded) for each month of delay.

FINANCIAL OBJECTIVE ACHIEVEMENT TESTS

The Retirement System's financial objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of active member payroll. If the contributions to the System are level in concept and soundly executed, the System will ***pay all promised benefits when due -- the ultimate test of financial soundness***. Testing for level contribution rates is ***the long-term solvency test***. Year by year computed contribution rates are displayed on page A-7.

There is no single all-encompassing test to measure a retirement system's funding progress and current funded status. Measures based on the actuarial accrued liability are shown on page A-5, and are described below.

The ratio of valuation assets to the actuarial accrued liability. The ratio is expected to gradually increase in the absence of benefit improvements and changes in actuarial assumptions.

The ratio of the unfunded actuarial accrued liability to member payroll. In a soundly financed retirement system, the amount of the unfunded actuarial accrued liability will be controlled and prevented from increasing in the absence of benefit improvements or strengthening of actuarial assumptions. However, in an inflationary environment it is seldom practical to impose this control on dollar amounts which are depreciating in value. The ratio is a relative index of condition where inflation is present in both items. The ratio is expected to gradually decrease in the absence of benefit improvements and changes in actuarial assumptions.

FINANCIAL OBJECTIVE ACHIEVEMENT TESTS - COMPARATIVE STATEMENT

Valuation Date December 31	(1) Valuation Assets	(2) Member Payroll	(3) Actuarial Accrued Liability**	Funded Ratio (1) / (3)	Unfunded Accrued Liability ** (4) Dollars (3) - (1)	Unfunded Accrued Liability ** % of payroll (4) / (2)
	($ amounts in thousands)					
1991	$ 105,476	$18,547	$132,005	79.9 %	$ 26,529	143.0 %
1992	117,823	21,315	146,093	80.6	28,270	132.6
1993	132,148	20,581	154,499	85.5	22,351	108.6
1993 #	132,148	20,581	176,763	74.8	44,615	216.8
1993 @	132,148	20,581	159,494	82.9	27,346	132.9
1994	141,908	20,318	169,539	83.7	27,631	136.0
1995	157,485	20,899	177,449	88.7	19,964	95.5
1995 @	157,485	20,899	182,436	86.3	24,951	119.4
1995 #	157,485	20,899	183,548	85.8	26,063	124.7
1996	172,830	20,392	192,348	89.9	19,518	95.7
1997	193,162	22,419	207,682	93.0	14,520	64.8
1998	217,011	22,792	218,533	99.3	1,522	6.7
1999	245,197	24,352	232,210	105.6	(12,987)	-
1999 #	245,197	24,352	233,332	105.1	(11,865)	-
2000	267,020	24,830	241,757	110.4	(25,263)	-
2000 #	267,020	24,830	241,915	110.4	(25,105)	-
2000 @	267,020	24,830	239,615	111.4	(27,405)	-
2001	280,518	25,751	249,204	112.6	(31,314)	-
2002	280,686	26,152	259,282	108.3	(21,404)	-
2003	277,947	26,484	267,786	103.8	(10,161)	-
2004	275,807	27,754	276,526	99.7	719	2.6
2004 #	275,807	27,754	279,873	98.5	4,066	14.7
2005	273,421	27,855	290,299	94.2	16,878	60.6
2006	278,839	29,582	304,122	91.7	25,283	85.5
2006 @	278,839	29,582	308,193	90.5	29,354	99.2
2007	293,571	29,600	315,635	93.0	22,065	74.5
2008	**287,394**	**30,161**	**326,673**	**88.0**	**39,279**	**130.2**

\# *After changes in benefit provisions.* @ *After changes in actuarial assumptions.*

** *Prior to 1998, the present value of credited projected benefits, and the unfunded present value are reported.*

The Short Condition Test is another way of looking at a system's progress under its funding program - based on the actuarial accrued liability. In a short condition test, the plan's valuation assets are compared with: 1) Active member contributions on deposit; 2) The liabilities for future benefits to present retired lives; 3) The liabilities allocated to service already rendered by active members. In a system that has been following the discipline of level percent-of-payroll financing, the liabilities for active member contributions on deposit (liability 1) and the liabilities for future benefits to present retired lives (liability 2) will be fully covered by valuation assets (except in rare circumstances). In addition, the liabilities assigned to service already rendered by active members (liability 3) will be partially covered by the remainder of valuation assets. The larger the funded portion of liability 3, the stronger the condition of the system. Liability 3 being fully funded is unusual, and not necessarily a by-product of level percent-of-payroll financing methods.

The schedule below illustrates the history of liabilities 1, 2 and 3.

SHORT CONDITION TEST - COMPARATIVE STATEMENT

	Actuarial Accrued Liability **						
Valuation Date December 31	**(1) Active Member Contr.**	**(2) Retirants and Benef.**	**(3) Active Members (Employer Financed Portion)**	**Valuation Assets**	**Portion of Accrued Liability Covered by Assets (1)**	**(2)**	**(3)**
		($ amounts in thousands)					
1990	$ 8,355	$ 66,337	$52,964	$ 96,263	100 %	100 %	40.7 %
1991	8,878	69,580	53,547	105,476	100	100	50.5
1992	9,469	74,260	62,364	117,823	100	100	54.7
1993 #	9,790	93,820	73,153	132,148	100	100	39.0
1993 @	9,790	85,909	63,795	132,148	100	100	57.1
1994	9,544	99,997	59,998	141,908	100	100	53.9
1995 @	9,787	107,834	64,815	157,485	100	100	61.5
1995 #	9,787	107,834	65,927	157,485	100	100	60.5
1996	10,228	122,891	59,229	172,830	100	100	67.0
1997	10,769	130,323	66,590	193,162	100	100	78.2
1998	10,332	142,841	65,360	217,011	100	100	97.7
1999 #	10,800	156,039	66,493	245,197	100	100	117.8
2000 @	11,402	163,301	64,912	267,020	100	100	142.2
2001	12,207	164,724	60,067	280,518	100	100	152.1
2002	13,195	174,523	71,564	280,686	100	100	129.9
2003	13,990	184,469	69,327	277,947	100	100	114.7
2004 #	15,888	182,800	78,223	275,807	100	100	98.6
2005	16,743	195,301	78,254	273,421	100	100	78.4
2006 @	18,837	198,763	90,592	278,839	100	100	67.6
2007	20,649	204,095	90,891	293,571	100	100	75.7
2008	**22,749**	**207,866**	**96,057**	**287,394**	**100**	**100**	**59.1**

\# *After changes in benefit provisions.*
@ *After changes in actuarial assumptions.*
** *Prior to 1998, the present value of credited projected benefits is reported.*

COMPUTED AND ACTUAL CITY CONTRIBUTIONS
COMPARATIVE STATEMENT

Fiscal Year Beginning July 1	Valuation Date December 31	Actual Dollar Contribution		Valuation Payroll	% of Payroll Contributions	
		Actual	1/1 Equivalent &		Computed	Estimated Actual
1986	1985	$3,800,590	$3,933,286	$ 14,449,986	27.22 %	27.22 %
1987	1986 @	3,700,000	3,815,607	14,781,719	25.86	25.81
1988	1987 @#	3,958,431	4,059,775	15,997,191	25.34	25.38
1989	1988 #	4,436,467	4,537,659	16,880,933	26.90	26.88
1990	1989 #	4,535,524	4,638,975	17,692,498	26.22	26.22
1991	1990	4,790,188 *	4,899,448	18,509,430	26.47	26.47
1992	1991	4,814,416 *	4,924,229	18,546,990	26.55	26.55
1993	1992	5,262,055 *	5,382,671	21,315,150	25.25	25.25
1994	1993 @#	4,385,106 *	4,446,929	20,580,645	21.86	21.61
1995	1994	4,335,066 *	4,449,013	20,317,910	21.89	21.90
1996	1995 @#	4,668,967 *	4,729,241	20,899,467	22.92	22.63
1997	1996	4,252,186 *	4,318,644	20,392,139	21.39	21.18
1998	1997	4,380,200 *	4,464,123	22,418,761	20.04	19.91
1999	1998	4,062,825 *	4,141,752	22,791,653	16.76	18.17
2000	1999 #	3,561,400	3,630,586	24,352,287	13.75	14.91
2001	2000 @#	2,664,643	2,716,408	24,829,591	10.09	10.94
2002	2001	2,637,000	2,671,042	25,750,669	9.72	10.37
2003	2002	3,275,305 *	3,317,587	26,152,464	11.93	12.69
2004	2003 @	3,345,160 *	3,389,180	26,484,226	11.95	12.80
2005	2004 #	4,658,703	4,720,009	27,754,429	15.93	17.01
2006	2005	5,385,960	5,455,490	27,855,441	18.35	19.59
2007	2006 @	6,576,000	6,660,893	29,582,427	20.92	22.52
2008	2007	6,427,974	6,510,955	29,599,828	19.54	22.00
2009	2008			**30,161,471**	**22.59**	

\# *After changes in benefit provisions.*

@ *After changes in actuarial assumptions or methods.*

& *The actual contribution and the equivalent mid-year contribution (January 1) are both shown, based on 7% annual interest (8% interest beginning in the 1994/95 fiscal year). This is done because the computed contribution rate is based on a mid-year contribution assumption.*

* *Excludes contribution for post-retirement health insurance.*

COMMENT A:

The financial experience during the year ended December 31, 2008 was less favorable than assumed (see page A-10). This was the result of the lower-than-projected rate of recognized investment return for the year (based on the 5-year smoothed market value) and lower than expected retired mortality. The funded ratio is 88.0%, and the computed City contribution rate is 22.59%.

COMMENT B:

We still believe that a separate trust should be established to receive contributions for and to pay post-retirement health care benefits. Governmental Accounting Standard No. 45 strongly encourages it.

COMMENT C:

As of December 31, 2008, valuation assets exceed the market value of assets by about $74.4 million. This amount represents investment losses that have not been recognized for valuation purposes. If investment returns on a market value basis are exactly realized, the employer contribution would be expected to increase by more than 12.0% of payroll.

COMMENT D:

We do not know how the System investments have performed during 2009, however, based on the information regarding the public retirement universe, we would expect a positive investment return for CY 2008. Though, even with gains from returns in excess of the expected 8.0%, prior losses will continue to be recognized as they are phased-in to the funding value of assets over the next few years. This means that, in the absence of extraordinary investment (or other experience) gains, we would expect the contribution rate to exceed 30% of payroll by the fiscal year ending June 30, 2014.

RECOMMENDATION:

We recommend that the following amount be transferred, as of December 31, 2008, from the Reserve for Retired Benefit Payments (RRBP) to the Reserve for Employer Contributions (RERC):

12/31/2008	
From RRBP	**To RERC**
$ (8,477,953)	**$8,477,953**

In preparing this actuarial valuation, it was assumed that the above reserve transfer had been completed.

CONCLUSION:

It is the actuary's opinion that the required contribution rate determined by the most recent actuarial valuation is sufficient to meet the System's financial objective, presuming continued timely receipt of required contributions.

ACTUARIAL BALANCE SHEET - DECEMBER 31, 2008

Present Resources and Expected Future Resources

A. Valuation assets:	
1. Net assets from System financial statements (market value)	$ 229,194,262
2. Valuation adjustment	74,368,743
3. Health insurance reserve	(16,168,524)
4. Valuation assets allocated to pensions	287,394,481
B. Actuarial present value of expected future employer contributions:	
1. For normal costs	45,697,393
2. For unfunded actuarial accrued liabilities	39,278,733
3. Total	84,976,126
C. Actuarial present value of expected future member contributions	23,991,033
D. Total Actuarial Present Value of Present and Expected Future Resources	$ 396,361,640

Actuarial Present Value of Expected Future Benefit Payments and Reserves

A. To retirants and beneficiaries	$ 207,866,496
B. To vested terminated members	2,912,436
C. To present active members:	
1. Allocated to service rendered prior to valuation date	115,894,282
2. Allocated to service likely to be rendered after valuation date	69,688,426
3. Total	185,582,708
D. Total Actuarial Present Value of Expected Future Benefit Payments	396,361,640
E. Reserves:	
1. Allocated to retirants and beneficiaries	none
2. Unallocated investment income	none
3. Total	none
F. Total Actuarial Present Value of Expected Future Benefit Payments and Reserves	$ 396,361,640

DERIVATION OF PENSION ACTUARIAL GAIN (LOSS)
YEAR ENDED DECEMBER 31, 2008

The actuarial gains or losses realized in the operation of the Retirement System provide an experience test. Gains and losses are expected to cancel each other over a period of years (in the absence of double-digit inflation) and sizable year to year fluctuations are common. Detail on the derivation of the actuarial gain (loss) is shown below, along with a year by year comparative schedule.

(1) UAAL* at start of year	$22,064,899
(2) Employer Normal cost for pensions	4,824,991
(3) Actual employer contributions	6,427,974
(4) Interest accrual	1,702,306
(5) Expected UAAL before changes	22,164,223
(6) Change from benefit changes	0
(7) Change from revised actuarial assumptions	0
(8) Expected UAAL after changes	22,164,223
(9) Actual UAAL at end of year	39,278,733
(10) Pension Gain (loss): (8) - (9)	(17,114,510)
(11) Pension Gain (loss) as percent of actuarial accrued liabilities at start of year ($315,635,482)	(5.4)%

* *Unfunded Actuarial Accrued Liability.*

Valuation Date December 31	Pension Actuarial Gain (Loss) As % of Beginning Accrued Liabilities
1998	5.9 %
1999	6.7
2000	0.0
2001	2.1
2002	(3.5)
2003	(3.8)
2004	(3.9)
2005	(4.5)
2006	(2.7)
2007	2.5
2008	**(5.4)**

PROJECTION OF CASH FLOW AND LIABILITIES
($ IN THOUSANDS)

Year End December 31	City Contributions*	Member Contributions	Investment Income**	Benefit Payments	Contribution Refunds	Valuation Assets	End of Year Actuarial Liability#
2008						$287,394	$327,074
2009	$ 7,179	$2,470	$ 3,540	$19,157	$35	281,392	340,843
2010	8,537	2,569	4,293	19,929	36	276,825	355,248
2011	9,834	2,672	1,804	20,881	37	270,216	370,144
2012	11,282	2,779	2,911	21,738	39	265,411	385,681
2013	12,674	2,890	20,620	22,395	40	279,159	402,132
2014	13,061	3,005	21,697	23,213	42	293,668	419,403
2015	13,459	3,126	22,822	24,362	44	308,669	437,228
2016	13,868	3,251	23,981	25,651	46	324,072	455,521
2017	14,297	3,381	25,184	26,634	47	340,252	474,654
2018	14,733	3,516	26,454	27,542	49	357,363	494,787

* *City contributions are assumed to be made on November 1 each year, and the System's other actuarial assumptions are met each year. Please refer to Comment D on page A-8 for additional essential information.*

** *Includes recognitions of scheduled investment gains (losses) known as of the valuation date, but otherwise assumes market value returns are 8% per annum.*

\# *The liability measure is the Entry-Age Actuarial Accrued Liability.*

SECTION B

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA SUBMITTED BY THE RETIREMENT SYSTEM

Benefit Provisions Evaluated and/or Considered - (December 31, 2008)

Regular Retirement (no reduction factor for age):

Eligibility - 25 or more years of service or age 55.

Mandatory Retirement Age - Age 70 for firefighters, age 60 for police groups.

Annual Amount – **Police**: Final average compensation multiplied by 3.2% times the first 25 years of service (maximum is 80%). **Fire**: Final average compensation multiplied by 3.2% times the first 25 years of service (maximum is 80%).

Type of Final Average Compensation - Highest 2 consecutive years.

Early Retirement (reduction for age): None.

Deferred Retirement (vested benefit):

Eligibility - 10 years of service. Payable at age 55.

Annual Amount - Same as regular retirement but based upon service and final average compensation at termination.

Duty Disability Retirement:

Eligibility - No age or service requirements.

Annual Amount - To age 55: 2/3 of final average compensation. At age 55: benefit is recomputed to include additional service credit to age 55 and an adjusted final average compensation based on current pay of rank held at retirement. For Fire and Police Non-Supervisory members the retiree may request the re-computation at the time he would have had 25 years of service if prior to age 55, instead of at age 55. Police-Supervisory members must convert at 25 years of service.

Non-Duty Disability Retirement:

Eligibility - 10 years of service.

Annual Amount - Computed as regular retirement. Maximum benefit is 2/3 of compensation of either a full paid patrolman or firefighter at date of retirement.

Duty Death Before Retirement:

Eligibility - No age or service requirements.

Annual Amount - 86% of regular retirement benefit to widow, but not less than 1/3 of final average compensation. Each unmarried child under age 21 receives an equal share of 1/4 of final compensation. Workers' compensation payments offset.

NON-DUTY DEATH BEFORE RETIREMENT:

Eligibility - 10 years of service.

Annual Amount - 50% of regular retirement benefit.

AUTOMATIC DEATH BENEFIT AFTER RETIREMENT:

Spouse's pension equals 50% of the regular retirement benefit the deceased retirant was receiving if retired on or after September 1, 1966. Members may elect a reduced benefit, either 93% or 86% of the regular benefit, thereby increasing the spouse pension to 75% or 86% of the regular benefit, respectively.

POST-RETIREMENT BENEFIT ADJUSTMENTS:

One-time benefit increases were granted in 1973, 1984 and 1987. The minimum annual benefit for persons with 20 or more years of credited service (service requirement waived for duty death cases) was increased to $10,500 ($5,250 for beneficiaries) in 1994.

Effective January 1, 1995 and each January 1 thereafter, the annual benefit amount will be increased by $525 for each retiree who meets each of the following conditions:

1) The retiree has 25 or more years of credited service, and
2) The retiree has attained age 60 as of the January 1 increase date, and
3) The retiree has been retired at least 6 months as of the January 1 increase date.

The $525 amount is reduced to $488.25 (93% of $525) or $451.50 (86% of $525) for retirees who elected the 93% or 86% optional forms of benefit, respectively. Spouses of deceased retirees or deceased members are also eligible for benefit increases each January 1 if:

1) The deceased retiree or deceased member had 25 or more years of credited service (waived in the case of duty death), and
2) The deceased retiree or deceased member would have attained age 60 as of the January 1 increase date, and
3) The deceased retiree had been retired or the deceased member had been deceased at least 6 months as of the January 1 increase date.

The spouse's annual benefit increase amount will be either $262.50 (50% of $525), $393.75 (75% of $525) or $451.50 (86% of $525), depending on the form of payment elected by the deceased retiree.

The benefit increases accumulate from year to year, and cumulative benefit increases shall not exceed cumulative increases in the Consumer Price Index.

SOCIAL SECURITY COVERAGE: No (except for Medicare coverage for new hires).

MEMBER CONTRIBUTIONS:

Fire: 7.58% of compensation.
Police Supervisors: 9.52% of compensation.
Police Non-Supervisors: 8.50% of compensation.

REPORTED FUND BALANCE (MARKET VALUE)

Reserves	Reported Fund Balance - December 31 2008	2007
Reserve for Employees' Contributions	$ 33,233,946	$ 29,903,103
Reserve for Employer Contributions	(19,596,751)	66,136,266
Reserve for Retired Benefit Payments	199,388,543	194,757,291
Reserve for Health Insurance	16,168,524	15,171,269
Reserve for Undistributed Investment Income	none	none
Total Fund Balance	$229,194,262	$305,967,929

Valuation assets are equal to reported market value of assets, except that only 20% of the difference between the market-to-market rate of return and the projected rate of return (the 8% actuarial assumption) is recognized each year. Such spreading reduces the fluctuation in the City's computed contribution rate which might otherwise be caused by market value fluctuations. The details of the spreading technique are shown on page B-5. The present method was adopted for the 1992 year. The valuation assets as of December 31, 2008 total $303,563,005. Subtracting the $16,168,524 reserve for health insurance results in valuation assets allocated to pension benefits of $287,394,481.

In financing actuarial accrued liabilities, valuation assets allocated to pensions of $287,394,481 were distributed as follows:

Reserves for	Valuation Assets Applied to Actuarial Accrued Liabilities for: Active Members	Retirants & Beneficiaries	Contingency Reserve	Totals
Employees' Contributions	$33,233,946			$ 33,233,946
Employer Contributions	(28,074,704)	$ 8,477,953		(19,596,751)
Retired Benefit Payments		199,388,543		199,388,543
Valuation Asset Adjustment	74,368,743			74,368,743
Total	$79,527,985	$207,866,496	none	$287,394,481

DERIVATION OF CERTAIN RESERVES
AS SUBMITTED BY THE CITY

HEALTHCARE RESERVE

HEALTHCARE RESERVE FUND BALANCE 01/01/08	$ 15,171,269		
PORTFOLIO RATE OF RETURN FOR PERIOD	1.58%		
ANNUAL INVESTMENT INCOME		239,707.00	
INVESTMENT INCOME JANUARY - DECEMBER			239,707.00

Healthcare Reserve Fund 01/01/09 is $15,171,269 + $239,707 + $757,548 (City contribution) = $ 16,168,524

Derivation of Valuation Assets
Market Value with 20% Recognition of the Difference Between the Market Rate of Return and the Projected Rate of Return

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Beginning of Year:									
(1) Market Value	$262,231,289	$273,707,942	$278,210,339	$300,438,362	$305,967,929				
(2) Valuation Assets	287,740,875	286,682,844	284,753,941	291,902,512	308,741,852				
End of Year:									
(3) Market Value	273,707,942	278,210,339	300,438,362	305,967,929	229,194,262				
(4) Net Additions to Assets, Excluding Investment Income and Admin. Expenses	(10,983,342)	(11,752,367)	(10,660,641)	(9,220,211)	(10,550,339)				
(5) Total Investment Income = (3) - (1) - (4)	22,459,995	16,254,764	32,888,664	14,749,778	(66,223,328)				
(6) Projected Rate of Return	8.00%	8.00%	8.00%	8.00%	8.00%				
(7) Projected Investment Income = (6) x [(2) + .5 X (4)]	22,579,936	22,464,533	22,353,890	22,983,393	24,277,335				
(8) Investment Income In Excess of Projected Income	(119,941)	(6,209,769)	10,534,774	(8,233,615)	(90,500,663)				
(9) Excess Investment Income Recognized This Year (5 year recognition)									
(9a) From This Year	(23,988)	(1,241,954)	2,106,955	(1,646,723)	(18,100,133)				
(9b) From One Year Ago	3,881,868	(23,988)	(1,241,954)	2,106,955	(1,646,723)	$(18,100,133)			
(9c) From Two Years Ago	(9,267,559)	3,881,868	(23,988)	(1,241,954)	2,106,955	(1,646,723)	$(18,100,133)		
(9d) From Three Years Ago	(5,989,436)	(9,267,559)	3,881,868	(23,988)	(1,241,954)	2,106,955	(1,646,723)	$(18,100,133)	
(9e) From Four Years Ago	(1,255,510)	(5,989,436)	(9,267,559)	3,881,868	(23,988)	(1,241,954)	2,106,955	(1,646,723)	$(18,100,131)
(9f) Total Recognized Investment Gain	(12,654,625)	(12,641,069)	(4,544,678)	3,076,158	(18,905,843)	(18,881,855)	(17,639,901)	(19,746,856)	(18,100,131)
(10) Change in Valuation Assets = (4) + (7) + 9[a..e]	(1,058,031)	(1,928,903)	7,148,571	16,839,340	(5,178,847)				
End of Year:									
(11) Market Value	273,707,942	278,210,339	300,438,362	305,967,929	229,194,262				
(12) Valuation Assets = (2) + (10)	286,682,844	284,753,941	291,902,512	308,741,852	303,563,005				
(13) Ratio of Valuation Assets to Market Value	104.7 %	102.4 %	97.2 %	100.9 %	132.4 %				
Rate of Return									
(14) Valuation Assets	3.5 %	3.5 %	6.4 %	9.1 %	1.8 %				
(15) Market Value	8.7 %	6.1 %	12.1 %	5.0 %	(22.0)%				

SUMMARY OF CURRENT ASSET INFORMATION REPORTED FOR VALUATION

Assets

	December 31, 2008	December 31, 2007
Cash & short-term investments	$ 9,712,720	$ 8,242,748
Stocks	113,100,118	178,502,907
Bonds	91,013,187	102,654,459
Real Estate	13,877,000	14,836,000
Receivables	1,705,772	1,997,127
Total Assets	$229,408,797	$306,233,241
Less accounts payable	214,535	265,312
Net Assets Available for Benefits	$229,194,262	$305,967,929

Revenues and Expenses

	December 31, 2008	December 31, 2007
Balance - January 1	$305,967,929	$300,438,362
Revenues		
Employees' contributions	2,489,272	2,610,538
Employer contributions*	7,185,522	7,310,352
Investment income	(65,291,805)	15,876,216
Miscellaneous	0	0
Expenses		
Benefit payments	20,225,133	19,141,101
Refunds of member contributions		
Administrative expenses	906,540	1,101,540
Miscellaneous	24,983	24,898
Balance - December 31	$229,194,262	$305,967,929

* *Includes $757,548 contribution for post-retirement health insurance in 2008, and $734,352 in 2007. Does not include overpayment of $388,603.*

ASSET INFORMATION REPORTED FOR VALUATION
COMPARATIVE STATEMENT

Year	Assets	Revenues				Expenses			
Ended Dec. 31	Beginning of Year	Employee Contrib.	Employer Contrib.	Investment Income	Misc. Income	Retirement Benefits	Contrib. Refunds	Misc. Expenses	Assets Year-End
1984	$ 53,428,705	$ 537,616	$3,398,974	$ 2,285,952	$ 0	$ 3,152,137	$14,023	$ 87,883	$ 56,397,204
1985	56,397,204	595,531	3,700,000	4,247,990	0	3,515,696	80,606	332,920	61,011,503
1986	61,011,503	604,076	3,800,590	8,594,172	0	3,956,772	16,953	399,114	69,637,502
1987	69,637,502	662,237	3,700,000	10,942,466	0	4,434,005	33,694	416,033	80,058,473
1988	80,058,473	687,941	3,958,431	3,994,522	0	4,832,714	23,228	388,190	83,455,235
1989	83,455,235	707,487	4,436,467	8,201,416	0	5,078,722	57,937	482,343	91,181,603
1990	91,181,603	772,519	4,535,524	7,413,037	0	5,846,109	33,506	483,126	97,539,942
1991	97,539,942	758,237	4,815,188	9,721,850	0	6,473,713	38,510	555,981	105,767,013
1992	105,767,013	873,356	4,864,416	13,331,763	0	6,844,725	16,635	634,998	117,340,190
1993	117,340,190	870,058	5,337,055	16,751,132	0	7,489,862	1,061	744,071	132,063,441
1994	132,063,441	846,857	4,485,106	10,831,570	0	8,427,956	4,911	474,165	139,319,942
1995	139,319,942	858,747	4,970,466	14,454,976	0	9,605,837	28,549	1,098,621	148,871,124
1996	148,871,124	1,131,175	5,880,029	18,206,570	0	10,486,096	26,313	962,618	162,613,871
1997	162,613,871	1,438,606	5,018,207	28,209,839	48,323,706 *	11,304,742	48,616	897,313	305,967,929
1998	233,353,558	964,932	5,695,801	44,874,038	0	12,713,480	41,205	1,288,584	270,845,060
1999	270,845,060	1,434,549	4,964,803	19,651,899	0	13,820,832	527	1,214,637	281,860,315
2000	281,860,315	1,411,124	4,555,737	14,750,613	0	15,048,922	17,159	1,350,946	286,160,762
2001	286,160,762	1,369,309	3,728,299	(7,277,307)	0	15,442,851	0	1,193,332	267,344,880
2002	267,344,880	1,741,797	2,637,000	(22,617,653)	0	15,879,378	0	1,057,628	232,169,018
2003	232,169,018	2,007,466	3,275,305	42,992,099	0	17,309,919	0	902,680	262,231,289
2004	262,231,289	2,394,375	4,683,777	23,301,735	0	18,061,494	0	841,740	273,707,942
2005	273,707,942	2,179,258	4,658,703	17,104,040	0	18,590,328	0	849,276	278,210,339
2006	278,210,339	2,779,840	6,305,960	33,595,700	0	19,746,441	0	707,036	300,438,362
2007	300,438,362	2,610,538	7,310,352	15,876,216	0	19,141,101	0	1,126,438	305,967,929
2008	**305,967,929**	**2,489,272**	**7,185,522**	**(65,291,805)**	**0**	**20,225,133**	**0**	**931,523**	**229,194,262**

* *Adjustments from cost value to market value.*

RETIRANTS AND BENEFICIARIES ADDED TO AND REMOVED FROM ROLLS
COMPARATIVE STATEMENT

Year Ended Dec. 31	Added to Rolls No.	Added to Rolls Annual Benefits	Added to Rolls Post-Ret. Incr.	Removed from Rolls No.	Removed from Rolls Annual Benefits	Rolls End of Year No.	Rolls End of Year Annual Benefits	% Incr. in Annual Benefits	Average Annual Benefits	Present Value of Benefits	Expected Removals
1985	19	$ 384,537		6	$ 39,842	301	$ 3,606,875	10.6	$ 11,983	$ 38,952,948	7.6
1986	26	549,274		8	46,895	319	4,109,254	13.9	12,882	45,288,852	8.0
1987	22	450,578	$ 79,097	6	74,822	335	4,564,107	11.1	13,624	48,867,840	8.3
1988	20	477,282	4,897	8	61,540	347	4,984,746	9.2	14,365	53,189,868	9.0
1989	18	311,722		14	118,384	351	5,178,084	3.9	14,752	54,988,308	9.5
1990	33	980,538	105,840	4	30,005	380	6,234,457	20.4	16,406	66,336,804	9.7
1991	21	525,891		14	193,323	387	6,567,025	5.3	16,969	69,579,744	10.5
1992	21	582,555		7	80,458	401	7,069,122	7.6	17,629	74,259,816	10.9
1993	29	853,326	-	13	156,721	417	7,765,727	9.9	18,623	85,908,588	11.7
1994	42	1,365,733	101,606	12	151,138	447	9,081,928	16.9	20,318	99,997,488	12.3
1995	28	917,742	121,321	10	185,897	465	9,935,094	9.4	21,366	107,833,524	12.5
1996	28	985,614	115,400	15	211,361	478	10,824,747	9.0	22,646	122,890,776	13.3
1997	19	785,797	122,707	9	107,518	488	11,625,733	7.4	23,823	130,323,108	13.6
1998	46	1,694,351	122,182	10	143,020	524	13,299,246	14.4	25,380	142,840,776	14.6
1999	32	1,083,047	129,007	10	218,701	546	14,292,599	7.5	26,177	156,038,820	15.8
2000	30	998,921	140,484	15	281,018	561	15,150,987	7.5	27,007	163,300,968	16.7
2001	22	577,947	129,907	21	386,261	562	15,472,580	2.1	27,531	164,723,676	16.9
2002	32	1,296,826	139,073	17	365,185	577	16,543,295	6.9	28,671	174,523,380	17.9
2003	31	1,206,943	121,632	11	197,969	597	17,673,901	6.8	29,605	184,468,860	17.9
2004	16	532,409	146,252	16	306,018	597	18,046,544	2.1	30,229	182,799,564	18.8
2005	31	1,381,736	196,687	13	262,204	615	19,362,763	7.3	31,484	195,300,672	20.0
2006	20	616,677	156,454	12	242,692	623	19,893,202	2.7	31,931	198,762,996	21.1
2007	31	968,142	161,775	31	562,378	623	20,460,741	2.9	32,842	204,095,076	21.0
2008	**22**	**753,083**	**169,556**	**17**	**363,696**	**628**	**21,019,684**	**2.7**	**33,471**	**207,866,496**	**20.4**

Retirants and Beneficiaries December 31, 2008
By Type of Benefits Being Paid

Type of Benefits Being Paid	No.	Annual Benefits Being Paid	Average Annual Benefits
Age and Service Benefits			
Regular service - benefit terminating at death of retirant	80	$ 2,613,309	$32,666
Regular service - potential 50% survivorship benefit to widow	354	13,886,414	39,227
Option I benefit - 100% joint and survivor	3	57,580	19,193
Option II benefit - 75% joint and survivor	28	1,308,726	46,740
Benefit being paid survivor beneficiary of deceased retirant	94	1,266,336	13,472
Total age and service benefits	559	19,132,365	34,226
Casualty Benefits			
Duty disability benefits			
Regular service-benefit terminating at death of retirant	15	559,391	37,293
Regular service - potential 50% survivorship benefit to widow	22	736,188	33,463
Option II benefit - 75% joint and survivor	5	183,901	36,780
Survivor beneficiary	13	171,689	13,207
Totals	55	1,651,169	30,021
Non-duty disability benefits			
Regular service - potential 50% survivorship benefit to widow	4	106,898	26,725
Totals	4	106,898	26,725
Benefit being paid survivor beneficiary of deceased members			
Duty death	5	74,179	14,836
Non-duty death	5	55,073	11,015
Totals	10	129,252	12,925
Total casualty benefits	69	1,887,319	27,352
Total Benefits Being Paid	**628**	**$21,019,684**	**$33,471**

RETIRANTS AND BENEFICIARIES - BY ATTAINED AGES
DECEMBER 31, 2008

(CONCLUDED ON NEXT PAGE)

Attained Ages	Age and Service Retirants		Disability Retirants		Survivor Beneficiaries	
	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
33	1	$ 40,123				
34	1	11,213				
35			2	$ 43,175		
36			1	31,951		
37			2	77,227		
38			2	67,831		
39	1	39,894	1	33,118		
41			1	42,130		
44	2	72,635	1	41,880		
45	2	51,222			1	$ 18,419
46	1	46,896	1	31,509		
47	7	382,760	2	70,183	1	33,482
48	3	173,347	1	32,275		
49	7	407,028	2	74,767	1	19,056
50	7	384,138			1	4,631
51	10	589,004	4	129,687		
52	6	279,452				
53	8	397,271			2	50,866
54	14	637,549	1	33,541	1	50,207
55	20	929,243	4	194,155	1	24,393
56	27	1,126,515	1	35,856		
57	23	942,261	2	57,608		
58	23	998,378	5	233,898	1	24,129
59	16	678,984			2	27,409
60	12	423,877			1	22,011
61	29	1,025,086				
62	25	992,477	1	28,675	1	13,938
63	17	626,444	1	35,431	2	21,711
64	15	526,530			1	13,586
65	14	531,510			4	54,300
66	18	678,992	1	31,918	3	46,848
67	14	473,035	1	13,196	4	62,019
68	15	527,584			2	24,391

RETIRANTS AND BENEFICIARIES - BY ATTAINED AGES
DECEMBER 31, 2008 - (CONCLUDED)

	Age and Service Retirants		Disability Retirants		Survivor Beneficiaries	
Attained Ages	No.	Annual Benefits	No.	Annual Benefits	No.	Annual Benefits
69	12	$ 460,257			4	$ 76,855
70	13	504,965			1	13,344
71	2	70,159			1	13,370
72	8	290,430			2	29,525
73	7	225,578	1	$ 36,225	2	24,638
74	7	202,488			6	72,651
75	4	119,246			5	62,262
76	6	164,221	3	75,352	3	36,973
77	8	222,383			5	55,988
78	12	364,197	2	55,311	5	70,850
79	9	208,638	1	26,207	5	49,830
80	10	300,827	1	27,175	7	90,497
81	7	198,807	1	26,097	10	112,067
82	3	49,074			6	83,925
83	8	228,819			4	36,370
84	5	148,901			2	18,511
85					3	43,926
86					7	62,798
87	1	17,850			2	26,140
88	1	17,850			1	8,926
89					1	8,925
90					3	26,778
91					1	10,235
92	2	35,700			1	8,925
93	2	42,191				
95					1	11,572
0						
Totals	**465**	**$17,866,029**	**46**	**$1,586,378**	**117**	**$1,567,277**

VESTED TERMINATED MEMBERS - BY ATTAINED AGES
DECEMBER 31, 2008

Attained Ages	No.	Estimated Annual Benefits
37	1	$ 22,014
43	2	40,248
44	1	17,483
45	1	31,897
46	1	27,818
47	1	35,683
48	4	91,256
49	1	20,045
50	1	20,919
52	2	41,568
54	2	76,470
55	1	21,292
Totals	**18**	**$446,693**

ACTIVE MEMBERS - DECEMBER 31, 2008
TABULATED BY MEMBER GROUPS

		No.	Annual Payroll	Average Age	Average Service	Average Pay
Police	- Supervisory	49	$ 3,870,343	44.2 yrs.	18.2 yrs.	$78,987
	- Non-Supervisory	191	11,855,021	36.4 yrs.	10.8 yrs.	62,068
	- Total	240	15,725,364	38.0 yrs.	12.3 yrs.	65,522
Fire		215	14,436,107	39.8 yrs.	12.5 yrs.	67,145
Totals		455	$ 30,161,471			

Active Members Included in Valuation
Comparative Statement

Valuation Date	Active Members			Vested Term.	Valuation	Average			%
Dec. 31	Police	Fire	Totals	Members	Payroll	Age	Service	Pay	Increase
1984	237	238	475	1	$ 13,635,108	38.4	14.1	$ 28,705	11.0 %
1985	239	237	476	1	14,449,986	38.2	14.0	30,357	5.8
1986	241	239	480	2	14,781,719	37.8	13.5	30,795	1.4
1987	242	232	474	3	15,997,191	38.0	13.7	33,749	9.6
1988	244	228	472	4	16,880,933	38.1	13.8	35,765	6.0
1989	245	236	481	4	17,692,498	38.2	13.8	36,783	2.8
1990	250	233	483	4	18,509,430	37.6	13.0	38,322	4.2
1991	247	235	482	4	18,546,990	37.9	13.3	38,479	0.4
1992	260	230	490	4	21,315,150	38.2	13.2	43,500	13.0
1993	253	233	486	4	20,580,645	38.2	13.2	42,347	(2.7)
1994	247	226	473	3	20,317,910	37.8	12.7	42,955	1.4
1995	251	230	481	4	20,899,467	37.6	12.3	43,450	1.2
1996	258	232	490	5	20,392,139	37.4	11.8	41,617	(4.2)
1997	256	233	489	6	22,418,761	37.4	11.8	45,846	10.2
1998	259	239	498	5	22,791,653	36.4	11.7	45,766	(0.2)
1999	261	232	493	5	24,352,287	36.4	10.4	49,396	7.9
2000	257	232	489	8	24,829,591	36.4	10.4	50,776	2.8
2001	259	227	486	10	25,750,669	37.1	11.0	52,985	4.3
2002	255	226	481	10	26,152,464	37.0	10.8	54,371	2.6
2003	247	218	465	10	26,484,226	37.1	10.9	56,955	4.8
2004	252	215	467	10	27,754,429	37.8	11.4	59,431	4.3
2005	238	211	449	14	27,855,441	37.9	11.5	62,039	4.4
2006	239	215	454	18	29,582,427	38.3	11.8	65,160	5.0
2007	244	218	462	18	29,599,828	38.3	11.9	64,069	(1.7)
2008	**240**	**215**	**455**	**18**	**30,161,471**	**38.9**	**12.4**	**66,289**	3.5

ACTIVE POLICE MEMBERS - DECEMBER 31, 2008
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	7							7	$ 321,606
25-29	16	14						30	1,671,157
30-34	7	29	11					47	2,869,087
35-39	2	5	48	6				61	4,066,166
40-44	1	3	13	16	5			38	2,574,915
45-49		1	5	11	26			43	3,225,738
50-54			2	1	7	1		11	767,404
55-59				1	2			3	229,291
Totals	**33**	**52**	**79**	**35**	**40**	**1**		**240**	**$15,725,364**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:	38.0	years.
Service	12.3	years.
Annual	$65,522	

ACTIVE FIRE MEMBERS - DECEMBER 31, 2008
BY ATTAINED AGE AND YEARS OF SERVICE

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
20-24	7							7	$ 324,011
25-29	19	3						22	1,116,225
30-34	7	13	6					26	1,689,916
35-39	5	13	24	3				45	3,028,413
40-44	4	4	12	27	4			51	3,549,130
45-49	1	2	6	19	16			44	3,203,054
50-54			2	1	8	2		13	957,714
55-59				1	4	1		6	491,821
64			1					1	75,823
Totals	**43**	**35**	**51**	**51**	**32**	**3**		**215**	**$14,436,107**

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age:	39.8	years.
Service	12.5	years.
Annual	$67,145	

SECTION C

FINANCIAL PRINCIPLES, ACTUARIAL VALUATION PROCESS, ACTUARIAL COST METHODS, ACTUARIAL ASSUMPTIONS AND DEFINITIONS OF TECHNICAL TERMS

BASIC FINANCIAL PRINCIPLES AND OPERATION OF THE RETIREMENT SYSTEM

Benefit Promises Made Which Must Be Paid For. A retirement program is an orderly means of handing out, keeping track of, and financing pension promises to a group of employees. As each member of the retirement program acquires a unit of service credit the member is, in effect, handed an "IOU" which reads: "The Retirement System promises to pay you one unit of retirement benefits, payments in cash commencing when you retire."

The principal related financial question is: When shall the money required to cover the "IOU" be contributed? This year, when the benefit of the member's service is received? Or, some future year when the "IOU" becomes a cash demand?

The Constitution of the State of Michigan is directed to the question:

> "Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities."

This Retirement System meets this requirement by having as its ***financial objective the establishment and receipt of contributions, expressed as percents of active member payroll, which will remain approximately level*** from year to year and will not have to be increased for future generations of taxpayers.

Translated into actuarial terminology, a level percent-of-payroll contributions objective means that the contribution rate must be at least:

> ***Normal Cost*** (the present value of future benefits assigned to members' service being rendered in the current year)
>
> . . . plus . . .
>
> ***Interest on the Unfunded Actuarial Accrued Liability*** (the difference between the actuarial accrued liability and current system assets).

The accumulation of invested assets ***is a by-product of level percent-of-payroll contributions, not the objective***. Investment income becomes the third major contributor to the retirement program, and the amount is directly related to the amount of contributions and investment performance.

If contributions to the retirement program are less than the preceding amount, the difference, ***plus investment earnings not realized thereon***, will have to be contributed at some later time (or benefits will have to be reduced) to satisfy the fundamental fiscal equation under which all retirement programs must operate:

B = C + I - E

The aggregate amount of Benefit payments to any group of members and their beneficiaries cannot exceed the sum of:

The aggregate amount of Contributions received on behalf of the group

. . . plus . . .

Investment earnings on contributions received and not required for immediate cash payments of benefits

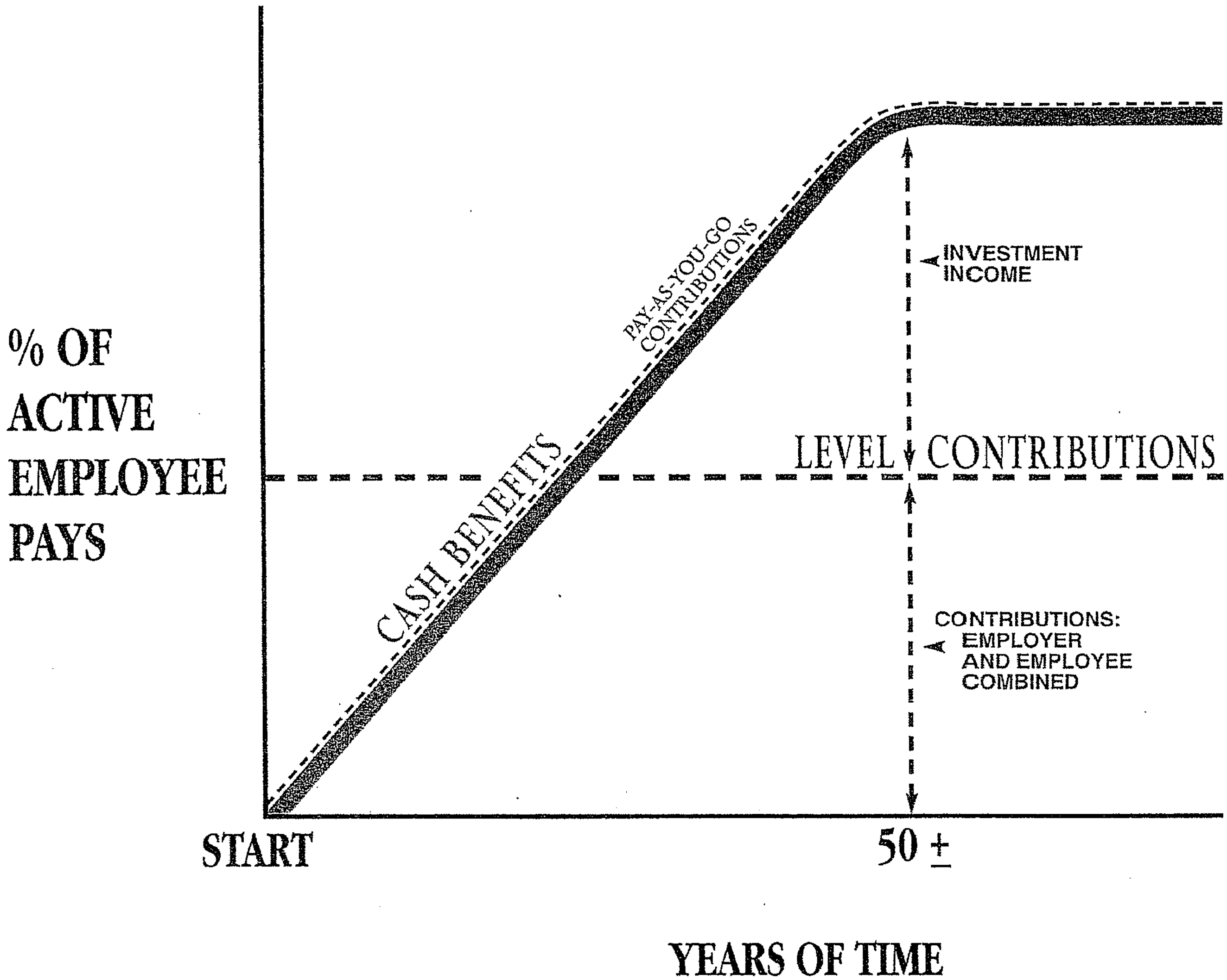
. . . minus . . .

The Expenses of operating the program.

There are retirement programs designed to defer the bulk of contributions far into the future. The present contribution rate for such systems is ***artificially low***. The fact that the contribution rate is destined to increase relentlessly to a much higher level, is often ignored.

This method of financing is prohibited in Michigan by the state constitution.

Computed Contribution Rate Needed to Finance Benefits. From a given schedule of benefits and from the data furnished him, the actuary calculates the contribution rate ***by means of an actuarial valuation*** - the technique of assigning monetary values to the risks assumed in operating a retirement program.



CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

- Economic Risk Areas
  - Rates of investment return
  - Rates of pay increase
  - Changes in active member group size
- Non-Economic Risk Areas
  - Ages at actual retirement
  - Rates of mortality
  - Rates of withdrawal of active members (turnover)
  - Rates of disability

The Actuarial Valuation Process

The financing diagram on the previous page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program) which is an ***increasing contribution method***; and the ***level contribution method*** which equalizes contributions between the generations.

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. ***Covered Person Data***, furnished by plan administrator
 Retired lives now receiving benefits
 Former employees with vested benefits not yet payable
 Active employees

B. + ***Asset data*** (cash & investments), furnished by plan administrator

C. + ***Assumptions concerning future financial experience in various risk areas***, which assumptions are established by the Board of Trustees after consulting with the actuary

D. + ***The funding method*** for employer contributions (the long-term, planned pattern for employer contributions)

E. + ***Mathematically combining the assumptions, the funding method, and the data***

F. = Determination of:
 Plan financial position
 and/or New Employer Contribution Rate

ACTUARIAL COST METHODS USED FOR THE VALUATION

Normal Costs. Normal cost and the allocation of actuarial present values between service rendered before and after the valuation date were determined using an individual entry-age actuarial cost method having the following characteristics:

(i) the annual normal costs for each individual active member, payable from the member's actual date of employment to projected date of retirement, are sufficient to accumulate the actuarial present value of the member's benefit at the time of retirement;

(ii) each annual normal cost is a constant percentage of the member's year by year projected covered pay.

Amortization of Unfunded Actuarial Accrued Liabilities. Unfunded actuarial accrued liabilities were amortized by level percent-of-payroll contributions (principal and interest combined) over a period of 30 years.

Active member payroll was assumed to increase 4.0% a year for the purpose of determining the level percent contributions. Characteristics of this method of amortization are illustrated on page C-6.

FINANCING UNFUNDED ACTUARIAL ACCRUED LIABILITIES WHICH WERE CALCULATED USING AN INFLATION ASSUMPTION OF 4.00% AND AN INVESTMENT RETURN ASSUMPTION OF 8.00% COMPOUNDED ANNUALLY*

LEVEL % OF PAYROLL AMORTIZATION: OPEN AMORTIZATION 30 YEARS PERPETUALLY IN THE FUTURE

Year	Active Employee Payroll	Unfunded Actuarial Accrued Liability	Annual Contributions Dollars	Annual Contributions % of Payroll	UAAL as % of Payroll
	($ in Thousands)				
1	$ 30,161	$ 39,279	$ 2,260	7.11 %	130.2 %
2	31,368	59,043	3,398	10.28	188.2
3	32,623	78,009	4,489	13.06	239.1
4	33,928	99,507	5,723	16.01	293.3
5	35,285	119,845	6,893	18.54	339.7
6	36,696	122,539	7,049	18.23	333.9
7	38,164	125,293	7,206	17.92	328.3
8	39,690	128,111	7,369	17.62	322.8
9	41,278	130,991	7,538	17.33	317.3
10	42,929	133,932	7,703	17.03	312.0
11	44,646	136,944	7,880	16.75	306.7
12	46,432	140,019	8,053	16.46	301.6
13	48,289	143,168	8,238	16.19	296.5
14	50,221	146,384	8,419	15.91	291.5
15	52,230	149,675	8,613	15.65	286.6
16	54,319	153,036	8,803	15.38	281.7
17	56,492	156,477	9,000	15.12	277.0
18	58,752	159,995	9,205	14.87	272.3
19	61,102	163,589	9,413	14.62	267.7
20	63,546	167,263	9,622	14.37	263.2
21	66,087	171,022	9,839	14.13	258.8
22	68,731	174,865	10,059	13.89	254.4
23	71,480	178,795	10,288	13.66	250.1
24	74,339	182,810	10,520	13.43	245.9
25	77,313	186,915	10,753	13.20	241.8
26	80,406	191,115	10,997	12.98	237.7
27	83,622	195,407	11,243	12.76	233.7
28	86,967	199,797	11,491	12.54	229.7
29	90,445	204,289	11,751	12.33	225.9
30	94,063	208,882	12,012	12.12	222.1

* *(Includes gain/losses scheduled for phase-in on page B-4.)*

ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The actuary calculates contribution requirements and actuarial present values for a retirement system by applying actuarial assumptions to the benefit provisions and people information of the system, using the actuarial cost methods described on page C-5.

The principal areas of risk which require assumptions about future experience are:

(i) long-term rates of investment return to be generated by the assets of the system.
(ii) patterns of pay increases to members.
(iii) rates of mortality among members, retirants and beneficiaries.
(iv) rates of withdrawal of active members.
(v) rates of disability among active members.
(vi) the age patterns of actual retirements.

In making a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - - a period of time which can be as long as a century.

The employer contribution rate has been computed to remain level from year to year so long as benefits and the basic experience and make-up of members do not change. Examples of favorable experience which would tend to reduce the employer contribution rate are:

(1) Investment returns in excess of 8.0% per year.

(2) Member non-vested terminations at a higher rate than outlined on page C-13.

(3) Mortality among retirants and beneficiaries at a higher rate than indicated by the mortality tables on C-11.

(4) Increases in the number of active members.

Examples of unfavorable experience which would tend to increase the employer contribution rate are:

(1) Pay increases in excess of the rates outlined on page C-10.

(2) An increase in the rate of retirement over the rates outlined on page C-13.

(3) A pattern of hiring employees at older ages than in the past.

Actual experience of the system will not coincide exactly with assumed experience, regardless of the choice of the assumptions, the skill of the actuary or the precision of the calculations. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time one or more of the assumptions is modified to reflect experience trends (but not random or temporary year to year fluctuations).

ACTUARIAL ASSUMPTIONS USED FOR THE VALUATION

Investment Return (net of administrative expenses).

8.0% a year, compounded annually. This rate consists of a real rate of return of 4.0% a year plus a long term rate of inflation of 4.0% a year.

This assumption is used to equate the value of payments due at different points in time and was first used for the December 31, 1993 valuation. Approximate rates of investment return, for the purpose of comparisons with assumed rates, are shown below. Actual increases in average active member pay are also shown for comparative purposes.

	Year Ended December 31					December 31, 2008	
	2008	2007	2006	2005	2004	3 Year Average	5 Year Average
Rate of Investment Return (recognized on valuation assets)	**1.8 %**	9.1 %	6.4 %	3.5 %	3.5 %	5.8 %	4.9 %
Increase in Average Pay	**3.5**	(1.7)	5.0	4.4	4.3	2.3	3.1

The nominal rate of return was computed using the approximate formula i = I divided by 1/2 *(A + B - I)*, where I is recognized investment income net of expenses, A is the beginning of year valuation assets, and B is the end of year valuation assets.

These rates of return should not be used for measurement of an investment advisor's performance or for comparisons with other systems -- ***to do so will mislead.***

Pay Projections. These assumptions are used to project current pays to those upon which benefits will be based. The assumptions were first used for the December 31, 2006 valuation.

Sample Ages	Annual Rate of Pay Increase for Sample Ages: Base (Economic)	Merit & Longevity	Total
20	4.0 %	5.5 %	9.5 %
25	4.0	5.5	9.5
30	4.0	2.0	6.0
35	4.0	0.6	4.6
40	4.0	0.4	4.4
45	4.0	0.2	4.2
50	4.0	0.2	4.2
55	4.0	0.1	4.1

Service at Beginning of Year	Additional Service Based on Merit/Seniority Portion of Annual Increases
0-4	6.0%
5-9	1.5%
10-14	0.5%
15 & over	0.0%

If the number of active members remains constant, the total active member payroll will increase 4.0% annually, the base portion of the individual pay increase assumptions. This increasing payroll was recognized in amortizing unfunded actuarial accrued liabilities.

Changes actually experienced in average pay and total payroll have been as follows:

	Year Ended December 31					December 31, 2008	
Increase in	**2008**	**2007**	**2006**	**2005**	**2004**	**3 Year Average**	**5 Year Average**
Average pay	**3.5 %**	(1.7) %	5.0 %	4.4 %	4.3 %	2.3 %	3.1 %
Total payroll	**1.9**	0.1	6.2	0.4	6.1	2.7	2.9

Mortality Table. The RP-2000 Combined Male and RP-2000 Combined Female tables were used to measure mortality for retirants after December 31, 2005. The RP-2000 Disabled Male and RP-2000 Disabled Female tables were used to measure mortality for disabled retirants. This table was first used for the December 31, 2006 valuation. Sample values follow:

	Actuarial Present Value of $1 Monthly for Life				Future Life Expectancy (Years)			
	Service		Disability		Service		Disability	
Sample Ages	Men	Women	Men	Women	Men	Women	Men	Women
50	$135.60	$138.81	$101.87	$120.42	30.80	33.59	18.21	25.11
55	128.15	132.41	95.64	113.28	26.18	28.91	15.94	21.69
60	118.59	124.05	89.04	105.69	21.74	24.38	13.81	18.58
65	107.04	113.86	81.48	97.09	17.61	20.12	11.76	15.66
70	93.87	102.05	72.77	87.28	13.88	16.23	9.77	12.93
75	79.25	88.78	63.43	76.80	10.57	12.74	7.95	10.49
80	63.99	74.38	54.40	66.18	7.75	9.68	6.39	8.37

The 1984 Projection of the 1971 Group Annuity Mortality Table, set back 0 years for men and 6 years for women was used to measure mortality for retirants before December 31, 2005. These tables were set forward 10 years to measure mortality for disabled retirants. This table was first used for the December 31, 1995 valuation. Sample values follow:

	Actuarial Present Value of $1 Monthly for Life				Future Life Expectancy (Years)			
	Service		Disability		Service		Disability	
Sample Ages	Men	Women	Men	Women	Men	Women	Men	Women
50	$128.99	$136.93	$110.81	$122.57	27.53	32.93	19.27	24.11
55	120.81	130.44	98.93	112.97	23.28	28.40	15.55	20.05
60	110.81	122.57	85.89	101.45	19.27	24.11	12.25	16.27
65	98.93	112.97	72.86	88.53	15.55	20.05	9.49	12.87
70	85.89	101.45	59.70	75.51	12.25	16.27	7.17	10.02
75	72.86	88.53	48.45	62.23	9.49	12.87	5.43	7.59
80	59.70	75.51	38.94	50.55	7.17	10.02	4.10	5.74

This assumption is used to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement.

Rates of separation from active membership. The rates do not apply to members eligible to retire and do not include separation on account of death or disability. This assumption measures the probabilities of members remaining in employment.

Sample Ages	Years of Service	% of Active Members Separating Within Next Year Police	Fire
ALL	0	5.00 %	5.00 %
	1	3.00	3.00
	2	2.00	2.00
	3	1.00	1.00
	4	1.00	1.00
20		1.25	0.80
25		1.25	0.80
30		1.12	0.72
35		0.81	0.52
40		0.62	0.40
45		0.44	0.28
50		0.31	0.20
55		0.25	0.16
60		0.25	0.16

The rates were first used for the December 31, 2006 valuation.

Rates of Disability. These assumptions represent the probabilities of active members becoming disabled.

Sample Ages	Percent Becoming Disabled Within Next Year
20	0.08 %
25	0.08
30	0.08
35	0.08
40	0.50
45	0.55
50	0.60
55	1.00
60	1.30

These rates were first used for the December 31, 1995 valuation. It was assumed that 95% of disability benefits payable would be duty-related and 5% not related to duty.

Rates of Retirement. These rates are used to measure the probabilities of an eligible member retiring during the next year.

Retirement Ages	Percents of Active Members Retiring within Next Year	
	Police	Fire
45	52 %	39 %
46	65	39
47	78	52
48	65	52
49	52	52
50	52	52
51	52	52
52	52	52
53	52	39
54	52	39
55	52	39
56	52	39
57	52	39
58	52	39
59	52	52
60	100	100

A member was assumed to be eligible for retirement after 25 or more years of service, or age 55 regardless of service.

These rates were first used for the December 31, 2006 valuation.

Active Member Group Size. The number of active members was assumed to remain constant. This assumption is unchanged from previous valuations.

SUMMARY OF ASSUMPTIONS USED
DECEMBER 31, 2008

PENSIONS IN AN INFLATIONARY ENVIRONMENT

VALUE OF $1,000/MONTH RETIREMENT BENEFIT TO AN INDIVIDUAL WHO RETIRES AT AGE 55 IN AN ENVIRONMENT OF 4.0% INFLATION

Age	Value
55	$1,000
56	962
57	925
58	889
59	855
60	822
65	676
70	556
75	457
80	375

The life expectancy of a 55 year old male retiree is age 81. The life expectancy for a 55 year old female retiree is age 84. Half of the people will outlive their life expectancy. The effects of even moderate amounts of inflation can be significant for those who live to an advanced age. This does not include the effect of the $525 annual post-retirement increase for eligible retirees which are also being diminished by the effects of inflation.

SUMMARY OF ASSUMPTIONS USED
DECEMBER 31, 2008
MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

Marriage Assumption - 90% of males and 90% of females are assumed to be married for purposes of death-in-service benefits.

Pay Increase Timing - Beginning of (Fiscal) year. This is equivalent to assuming that reported pays represent amounts paid to members during the year ended on the valuation date.

Decrement Timing - Decrements of all types are assumed to occur mid-year.

Eligibility Testing - Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

Benefit Service - Exact fractional service is used to determine the amount of benefit payable.

Decrement Relativity - Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.

Decrement Operation - Disability and mortality decrements do not operate during the first 5 years of service. Disability and withdrawal do not operate during retirement eligibility.

Normal Form of Benefit - The assumed normal form of benefit is 50% joint and survivor.

Loads - None.

Incidence of Contributions - Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made. New entrant normal cost contributions are applied to the funding of new entrant benefits.

DEFINITIONS OF TECHNICAL TERMS

Accrued Service - Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability - The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

Actuarial Assumptions - Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method - A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefits" between future normal costs and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent - One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

Actuarial Gain (Loss) - The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

Actuarial Present Value - The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments.

Amortization - Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

Credited Projected Benefit - The portion of a member's projected benefit attributable to service before the valuation date - allocated based on the ratio of accrued service to projected total service and based on anticipated future compensation.

Normal Cost - The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as "current service cost."

Unfunded Actuarial Accrued Liabilities - The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs.

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in their amount (after due allowance for devaluation of the dollar).

SECTION D

DISCLOSURES REQUIRED BY THE GOVERNMENTAL ACCOUNTING STANDARDS BOARD

This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.

ACTUARIAL ACCRUED LIABILITY

The actuarial accrued liability is a measure intended to help users assess (i) a pension fund's funded status on a going-concern basis, and (ii) progress being made toward accumulating the assets needed to pay benefits as due. Allocation of the actuarial present value of projected benefits between past and future service was based on the individual entry-age actuarial cost method. Assumptions, including projected pay increases, were the same as used to determine the Retirement System's level percent of payroll annual required contribution between entry-age and assumed exit age. Entry-age was established by subtracting credited service from current age on the valuation date.

The preceding methods comply with the financial reporting standards established by the Governmental Accounting Standards Board.

The entry-age actuarial accrued liability was determined as part of an actuarial valuation of the plan as of December 31, 2008. Significant actuarial assumptions used in determining the entry-age actuarial accrued liability include (a) a rate of return on the investment of present and future assets of 8% per year compounded annually, (b) projected salary increases of 4.0% per year compounded annually, attributable to inflation, (c) additional projected salary increases ranging from 0.51% to 11.5% per year, depending on age and service, attributable to seniority/merit and (d) the assumption that benefits will increase $525 annually after retirement.

At December 31, 2008, the unfunded accrued liability was $39,278,733, determined as follows:

Actuarial Accrued Liability:	
Active participants (292 vested and 163 non-vested)	$ 115,894,282
Retired participants and beneficiaries currently receiving benefits (628 receiving)	207,866,496
Vested terminated participants not yet receiving benefits (18 vested)	2,912,436
Total Actuarial Accrued Liability	326,673,214
Actuarial Value of Assets (smoothed market value)#	287,394,481
Unfunded Actuarial Accrued Liability	$ 39,278,733

Excluding reserve for health insurance.

During the period from December 31, 2007 to December 31, 2008 the System experienced a net change of $11,037,732 in the actuarial accrued liabilities. There were no changes in actuarial assumptions, benefit provisions or methods.

REQUIRED SUPPLEMENTARY INFORMATION
SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date December 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded AAL (b)-(a)	Funded Ratio (a)/(b)	Active Member Covered Payroll (c)	Unfunded AAL as a Percentage of Active Member Covered Payroll ((b-a)/c)
		($ amounts in thousands)				
2001	$280,518	$249,204	($31,314)	112.6 %	$25,751	- %
2002	280,686	259,282	(21,404)	108.3	26,152	-
2003	277,947	267,786	(10,161)	103.8	26,484	-
2004	275,807	276,526	719	99.7	27,754	2.59
2004 *	275,807	279,873	4,066	98.5	27,754	14.65
2005	275,216	290,299	15,083	94.8	27,855	54.15
2006 **	278,839	308,193	29,354	90.5	29,582	99.23
2007	293,571	315,635	22,065	93.0	29,600	74.54
2008	**287,394**	**326,673**	**39,279**	**88.0**	**30,161**	130.23

* *After changes in benefit provisions.*

** *After changes in actuarial assumptions.*

Analysis of the dollar amounts of actuarial value of assets, actuarial accrued liability, or unfunded actuarial accrued liability in isolation can be misleading. Expressing the actuarial value of assets as a percentage of the actuarial accrued liability provides one indication of the system's funded status on a going-concern basis. Analysis of this percentage over time indicates whether the system is becoming financially stronger or weaker. Generally, the greater this percentage, the stronger the plan. The unfunded actuarial accrued liability and annual covered payroll are both affected by inflation. Expressing the unfunded actuarial accrued liability as a percentage of covered payroll approximately adjusts for the effects of inflation and aids analysis of the progress being made in accumulating sufficient assets to pay benefits when due. Generally, the smaller this percentage, the stronger the plan.

CONTRIBUTIONS REQUIRED AND CONTRIBUTIONS MADE

The Retirement System's financial objective provides for periodic employer contributions at actuarially determined rates that, expressed as percentages of annual covered payroll, are designed to accumulate sufficient assets to pay benefits when due. The normal cost and amortization payment for the year ended June 30, 2009 were determined using an entry-age actuarial funding method. Unfunded actuarial accrued liabilities were amortized as a level percent-of-payroll over an open period of 30 years.

During the year ended June 30, 2009 employer contributions totaling $6,427,974 (excludes $757,548 contribution for health insurance) were made in accordance with contribution requirements determined by an actuarial valuation of the plan as of December 31, 2007. The employer contributions consisted of $4,824,991 for normal cost and $1,602,983 for amortization of the unfunded actuarial accrued liability. Employer contributions represented 20.61% of projected valuation payroll. Employer contributions, if any, made after December 31, 2008 are not reflected here.

Significant actuarial assumptions used to compute contribution requirements were the same as those used to compute the standardized measure of the actuarial accrued liability.

Schedule of Employer Contributions

Fiscal Year Ending June 30	Valuation Date December 31	Annual Required Contribution# ($ In Thousands)	Percentage Contributed
2001	1999	$3,561	100.0 %
2002	2000	2,665	100.0
2003	2001	2,637	100.0
2004	2002	3,287	99.7
2005	2003	3,334	100.3
2006	2004	4,659	100.0
2007	2005	5,386	100.0
2008	2006	6,521	100.0
2009	2007	6,094	106.4
2010	**2008**	**7,179**	

 # Due on November 1st.